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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ronald O Neerings
Texas Instruments Inc
P O Box 655474 M/S 3999
Dallas, TX 75265

EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 01/09/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/706,068

Applicant(s)

BELLAOUAR, ABDELLATIF

Examiner

Edith M Chang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8-15, 18-22, & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1).

Regarding **claims 1 & 11**, except explicitly specify the comparison frequency generator in the frequency synthesizer, Bjerede et al. discloses all subject matter claimed: An apparatus and its methods for producing an RF transmission signal including a plurality of frequency channels (column 1 lines 60-65, column 5 lines 45-50, column 6 lines 22-26, where the apparatus includes multiple frequency channels, the channel spacing is suggested). It comprises: an IF processor having a first input for receiving a baseband signal and a second input for receiving a first combining signal (28 FIG.2/50-98 FIG.9 is the IF processor, column 9 lines 19-21 wherein the local oscillator provides the first combining signal to IF processor in FIG.2 or the input of 98/output of 100 FIG.9 is the first combining signal), the IF processor for combining the baseband signal with the first combining signal to produce an IF signal (26-28 FIG.2, 26-98 FIG.9); an RF processor having a first input coupled to the IF processor for receiving the IF signal and a second input for receiving a second combining signal (30 FIG.2/52-114 FIG.9 is the

Art Unit: 2634

RF processor, 54 FIG.2/FIG.9 provides the second combining signal), the RF processor for combining the IF signal with the second combining signal to produce an RF transmission signal including a plurality of frequency channels separated by a desired frequency channel spacing (column 5 lines 45-50, where the channel spacing is suggested); a first frequency synthesizer coupled to the second input of the IF processor for providing the first combining signal (100 FIG.9 is the frequency synthesizer). However Hafez et al. teaches the comparison frequency generator for generating a comparison frequency corresponding to the raster component (32 Fig.2/112 Fig.9 where the 32/112 is the comparison frequency generator, the 12.5k is the raster component). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 2 & 12**, Bjerede et al. does not specify the comparison frequency is an integer multiple of the raster component, however Hafez et al. teaches the comparison frequency is an integer multiple of the raster component (32 Fig.2 where the 1.85M is an integer multiple of the raster component, 1.5625k or 12.5K divided by $N=8$, column 6 lines 56-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 3 & 13**, Bjerede et al. does not specify the comparison frequency is equal to the raster component, however Hafez et al. teaches the comparison frequency is equal to the raster component (Fig.2 provides the model to get the comparison frequency being equal to

Art Unit: 2634

the raster component when adjust the N accordingly to the raster provided by the system). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 4-5, 10, 14-15, 20, & 22**, Bjerede et al. does not specify an integer/type-1 phase locked loop, however Hafez et al. teaches an integer/type-1 phase locked loop (Fig.2 having $1/N$ feedback and the phase detector 30 being coupled to the loop filter 34 without use of a charge pump). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the integer phase locked loop taught by Hafez et al. in the first frequency synthesizer of Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 8 & 18**, Bjerede et al discloses a second frequency synthesizer coupled to the second input of said RF processor for providing the second combining signal (54 FIG.2) but does not specify the comparison frequency generator in the second frequency synthesizer. However Hafez et al. teaches the comparison frequency generator (32 Fig.2 for generating the comparison frequency). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s RF synthesizer to generate a RF frequency (which is greater than the raster component) to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Art Unit: 2634

Regarding **claims 9 & 19**, Bjerede et al discloses the comparison frequency corresponds to a fu component of the desired frequency channel spacing other than the raster component (column 9 lines 25-33, where the 300k is the desired frequency channel spacing).

Regarding **claims 21 & 24**, except specify the raster component of the desired frequency channel spacing, Bjerede et al. discloses all subject matter claimed: An apparatus and its methods for producing an RF transmission signal including a plurality of frequency channels separated by a desired frequency channel spacing (column 6 lines 22-26 where the transmission frequency channels in the signal separated by the desired spacing). It comprises: an input for receiving a baseband signal (26 FIG.2/FIG.9); an IF processor coupled to the input for receiving the baseband signal and producing therefrom an IF signal (28 FIG.2/96-98FIG.9); and an RF processor coupled to the IF processor for receiving the IF signal and producing therefrom the RF transmission signal (30 FIG.2, 52-114FIG.9). However Hafez et al. teaches the raster component of the desired frequency channel spacing (column 1 lines 43-46, column 43 lines 21-25, wherein the channel spacing assigned according to the wireless standard and associated raster component assigned Fig.2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s IF synthesizer to have the raster component of the desired frequency channel spacing included in the IF signal to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Art Unit: 2634

3. Claims 6 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1) as applied to claims 1 and 11 above, and further in view of Khlat (US 6069535).

Regarding **claims 6 & 16**, Bjerede et al. does not explicitly specify the channel spacing for UMTS, however Khlat teaches the PLL frequency synthesizer for UMTS (FIG.1, column 49-55). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the UMTS teaching by Khlat in the Bjerede et al.'s apparatus to provide a UMTS transmitter to have an efficient and low noise fractional-N synthesizers. (column 1 lines 43-45, column 2 lines 13-17).

4. Claims 7 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1) as applied to claims 1 and 11 above, and further in view of Boesch (US 6556545 B1).

Regarding **claims 7 & 17**, Bjerede et al. does not explicitly specify the channel spacing for WCDMA, however Boesch teaches the phase locked loops/synthesis for WCDMA (60 FIG.2, column 1 lines 15-21, column 4 lines 16-35) provided in a WCDMA transmitter. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the WCDMA teaching by Boesch in the Bjerede et al.'s apparatus to provide a WCDMA transmitter to have an efficient and low cost radio apparatus (column 2 lines 3-11).

Art Unit: 2634

5. Claims 23 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1) as applied to claims 21 & 24 above, and further in view of Khlat (US 6069535) and Boesch (US 6556545 B1).

Regarding **claims 23 & 25**, further Khlat teaches the PLL frequency synthesizer for UMTS (FIG. 1, column 49-55), and Boesch teaches the phase locked loops/synthesis for WCDMA (FIG. 2, column 1 lines 15-21, column 4 lines 16-35). As the RF signal depending on wireless standards transmitted, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the UMTS teaching by Khlat in the Bjerede et al.'s apparatus to provide a UMTS transmitter to have an efficient and low noise fractional-N synthesizers, (column 1 lines 43-45, column 2 lines 13-17) and/or to have the WCDMA teaching by Boesch in the Bjerede et al.'s apparatus to provide a WCDMA transmitter to have an efficient and low cost radio apparatus (column 2 lines 3-11).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

Application/Control Number: 09/706,068
Art Unit: 2634

Page 8

Edith Chang
January 3, 2004


CHIEH M. FAN
PRIMARY EXAMINER